

Message

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**From:** John Fuss [John.Fuss@tn.gov]  
**Sent:** 4/21/2021 8:05:38 PM  
**To:** Bloeth, Mark [Bloeth.Mark@epa.gov]  
**CC:** Julie Verissimo [Julie.Verissimo@tn.gov]; Justin Dolzen [Justin.Dolzen@tn.gov]; Jeryl Stewart [Jeryl.Stewart@tn.gov]; Bryan Parker [Bryan.Parker@tn.gov]  
**Subject:** RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124  
**Attachments:** Inputs\_Outputs-PHG-SF-Master-Rev1.pdf  
**Flag:** Follow up

Hello Mark,

Good day to you, we received this attached energy balance sheet from our friends at VES regarding the Covington gasification unit. Passing this along as FYI...

We had a call with the Covington Mayor and VES representatives to go over TDEC's letter a few weeks ago. They've submitted this attached document as well as some responses to questions in an informal email to address the TDEC letter. We'd like to put everyone in touch at this point, EPA, VES, Covington, and TDEC, to discuss the points made by EPA in the July 2020 applicability response letter with regard to subpart Ec being indeterminant. They are close to obtaining approval to do the pilot trial processing medical waste and to help ensure their test is fruitful, we think it'd be a good idea that they get clarity and certainty about obtaining the necessary data during the test that is going to enable a definitive applicability determination, by having EPA directly on the line.

Would you mind proposing some dates and times for a discussion? I will attempt to facilitate a meeting amongst all the interested parties.

Thanks, Mark, I hope everything is well on your end.



John Fuss | Environmental Manager 3  
Division of Air Pollution Control  
William R. Snodgrass Tennessee Tower, 15<sup>th</sup> Floor  
312 Rosa L. Parks Avenue, Nashville, TN 37243  
Office: 615-532-0535

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**From:** Bloeth, Mark <Bloeth.Mark@epa.gov>  
**Sent:** Tuesday, March 30, 2021 8:21 AM  
**To:** John Fuss <John.Fuss@tn.gov>  
**Cc:** Julie Verissimo <Julie.Verissimo@tn.gov>; Justin Dolzen <Justin.Dolzen@tn.gov>; Jeryl Stewart <Jeryl.Stewart@tn.gov>; Bryan Parker <Bryan.Parker@tn.gov>  
**Subject:** [EXTERNAL] RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Hey John,

R4 received additional informal feedback from OAQPS / OECA with some thoughts and questions for TDEC's consideration (see summary below); overall, EPA HQ agreed with TDEC's response comments back to City of Covington.

### OECA Comments/Questions

Item numbers refer to Item Numbers in TDEC's 03/09/2021 letter:

1. No comment.
2. Additional comment: If the calibration is only accurate if they "catch" the feed cycle auger "on time" – how do they ensure they catch it? In other words, the calibration MUST be done during the "on-time" and must demonstrate that it was conducted during that time. (and as TN notes we need to understand what that means).
3. No comment.
4. The plastic composition is an issue in a couple of places. See also 7 below. If they say there is no chlorinated plastic then there has to be an initial and on-going way to ensure no chlorinated plastic ever is processed. While beyond the scope of the Trial Burn an idea for on-going could be an MOU or something with the generating source thru buyer agreements they establish and police.
5. At one point there was an issue with the number of test runs. Confirm this was resolved. Also, the test appears to be run *continuously* for 26 hours. Confirm.
6. Several observations/comments:

**Auger system** – This concerns me greatly. How will they feed plastic bagged waste using an auger? Won't it just shred and gum up? Also, how can this possibly be safe to shred red bag waste and expose workers? Will they be pulling it out when it gums up the auger by hand? Does RCRA have some jurisdiction here because this does not sound safe. They also say "hand fed" so maybe they are by-passing the auger for the medical waste?

**Material Balances and Energy Balances** - Without reviewing the test report it is unclear if TN is requiring them to test both the outlet of the gasifier and the outlet of the TO. Hopefully R4 can confirm. Also need to make clear WHERE the monitoring should occur – both gasifier and the TO as both are necessary to ensure the unit is operated as planned and that if it is not a combustor, the parameters to ensure such are monitored and maintained.

**Expected Composition of RMW** – VES may need some hand holding here if they continue to not give us what we need. We need to know if the waste is comprised of: (and cite to definitions):

- i. Pathological Waste
  - ii. Low-level radioactive waste
  - iii. Chemotherapeutic waste
  - iv. Is only one of (i)-(iii) or a combination of (i)-(iii) processed? Yes or No?
  - v. Hospital Waste
  - vi. Medical/Infectious Waste
7. General comment on 7 – TN appears to accept Point 6/7 but their analysis in Pt 2 identifies concerns with weighing and calibration. Make sure it is clear the Pt 2 concerns must be addressed. Also related comment from 4 - How they ensure non-chlorinated plastics (for test and on-going). And related comment on 6 - Testing needs to be at outlet of gasifier and TO.

### OAQPS Comments/Questions

- What type of waste? To make sure it's "medical waste" and not for example pathological. Ratio at trial burning?
- What kind of plastic bags are the medical waste in?
- How often will this method be used?
- Is incineration occurring or is it a pyrolysis unit? What are the oxygen levels?
- The unit is already constructed as a different type of unit, but if O2 levels show that incineration is occurring then the unit is subject to HMIWI and the trial burn is the initial startup; they will have to do a performance test on the unit and are subject to HMIWI
- Need measurement/control of temperature and oxygen levels and syngas composition to determine applicability

I hope this additional input from EPA Headquarters proves useful. Let me know if there are any areas which need further clarification from our end.

Mark Bloeth  
Air Analysis and Support Branch  
Communities and Air Toxics Section  
U.S. EPA Region 4  
61 Forsyth Street, SW  
Atlanta, Georgia 30303  
(404) 562-9013

---

**From:** Bloeth, Mark

**Sent:** Friday, March 19, 2021 8:22 AM

**To:** John Fuss <[John.Fuss@tn.gov](mailto:John.Fuss@tn.gov)>

**Cc:** Julie Verissimo <[Julie.Verissimo@tn.gov](mailto:Julie.Verissimo@tn.gov)>; Justin Dolzen <[Justin.Dolzen@tn.gov](mailto:Justin.Dolzen@tn.gov)>; Jeryl Stewart <[Jeryl.Stewart@tn.gov](mailto:Jeryl.Stewart@tn.gov)>; Bryan Parker <[Bryan.Parker@tn.gov](mailto:Bryan.Parker@tn.gov)>; Lusky, Katy <[Lusky.Kathleen@epa.gov](mailto:Lusky.Kathleen@epa.gov)>; Watson, Marion <[Watson.Marion@epa.gov](mailto:Watson.Marion@epa.gov)>

**Subject:** RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Hi John and everybody,

While we did not receive any input from EPA Headquarters as yet, below are some things that stood out to Region 4 in reviewing the correspondence and other materials you sent:

- 8 tpd = woodchip “stable throughput rate”, how does this jive with the other tpd rates of wood waste being stated elsewhere in the documents?
- a lack of real data about the medical waste bag composition is apparent (e.g., how is the composition of the “as received” medical waste bags either known or even really estimated, especially as it relates to type and/or amount of chlorinated plastics) ... while a 2016 Cambridge University study of ‘hospital waste’ composition is referenced, we do not see how that is an acceptable and/or equivalent representation of what the received medical waste bags contain; some established sampling protocol should be conducted to determine the average composition of the medical waste bags received.
- we did find some inconsistencies in the documentation (which I’m not totally certain were specifically noted by TDEC back to City of Covington), about both the amounts of each waste type intended for the trial burn as well as the run times... (e.g., 12 tons wood : 1 ton medical waste -vs- ~6 tons wood : ~12-14 tons medical waste ... and, a test run being a total of “30-36 hours” -vs- “26 hr length of trial burn”).
- we do appreciate the fact that TDEC did lay out all the many failures of the City of Covington in addressing our July 13, 2020 letter to VES (6 specific bullets); these answers will be necessary for EPA to have enough information in order to evaluate the unit for HMIWI applicability.
- if the City of Covington has chosen 80 wt% wood chip waste and 20 wt% medical waste as their desired maximum operating point for the representation of medical waste, then the unit’s performance must demonstrate pyrolysis/gasification operation at that condition.
- we recommend that when the trial burn is witnessed by TDEC, the City of Covington works with TDEC to fill out/complete OAQPS’s Stack Testing Protocol located at [\*EPA Source Test Observation and Review Report Checklist\*](#) ... the City of Covington would need to provide all of the necessary information TDEC requests in order to complete it.
- lastly, we do not believe we ever got a solid final answer from VES as to the maximum capacity of what a “PHG-12” Model gasifier unit could handle in tpd ... my research seemed to indicated it was a smaller unit only capable of 12 tpd ... *See my previous 5/12/20 email discussion to John below:*

Thanks for keeping EPA informed about this; take care.

Mark

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**From:** John Fuss <[John.Fuss@tn.gov](mailto:John.Fuss@tn.gov)>  
**Sent:** Tuesday, May 12, 2020 11:42 AM  
**To:** Bloeth, Mark <[Bloeth.Mark@epa.gov](mailto:Bloeth.Mark@epa.gov)>  
**Cc:** Julie Verissimo <[Julie.Verissimo@tn.gov](mailto:Julie.Verissimo@tn.gov)>; Justin Dolzen <[Justin.Dolzen@tn.gov](mailto:Justin.Dolzen@tn.gov)>; Watson, Marion <[Watson.Marion@epa.gov](mailto:Watson.Marion@epa.gov)>  
**Subject:** RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Mark,

To my knowledge the unit has not been modified to increase its physical capacity. I attributed the relatively larger input capacity for medical wastes on the assumption that perhaps the medical waste may be able to be processed at a faster rate than the currently permitted inputs of woody biomass and sewage sludge? I don't know that this assumption is a good one, and I'd not recognized that there was that drastic of an inconsistency either (60 tpd vs 12 tpd). My understanding is the Covington unit is one of the smaller units (< 10 MMBtu/hr) that PHG (Aries Energy) offered. This has not been an issue we'd raised with Mr. Scott and their application yet at this point, but will be something that we will also question as to how their stated 'design' input rate in the application is achievable, versus the rate in the published literature.

Thanks for that info, Mark. -John



**John Fuss** | Environmental Manager 3  
Division of Air Pollution Control  
William R. Snodgrass Tennessee Tower, 15<sup>th</sup> Floor  
312 Rosa L. Parks Avenue, Nashville, TN 37243  
Office: 615-532-0535

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**From:** Bloeth, Mark <[Bloeth.Mark@epa.gov](mailto:Bloeth.Mark@epa.gov)>  
**Sent:** Tuesday, May 12, 2020 10:17 AM  
**To:** John Fuss <[John.Fuss@tn.gov](mailto:John.Fuss@tn.gov)>  
**Cc:** Julie Verissimo <[Julie.Verissimo@tn.gov](mailto:Julie.Verissimo@tn.gov)>; Justin Dolzen <[Justin.Dolzen@tn.gov](mailto:Justin.Dolzen@tn.gov)>; Watson, Marion <[Watson.Marion@epa.gov](mailto:Watson.Marion@epa.gov)>  
**Subject:** [EXTERNAL] RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

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Hey John, Justin and Julie,

I have a quick question ... I know that VES responded back to me regarding my question about the size model of the PHG unit from their literature (PHG-8, PHG-12 or PHG-LF) for the GS-200 gasifier capacity stating "we have the largest one" (which doesn't really answer my question). The VES permit application (signed 2/24/20) reflects an input rate for Regulated Medical Waste to be 64 tpd (5,333.34 pounds/hr) seemingly indicating a large capacity PHG gasifier system, but this doesn't match the internet history I've found about what was installed at Covington circa 2013 (see weblinks) ... <https://www.wastetodaymagazine.com/article/rew1215-phg-energy-biogas-gasification-technology/> and <http://www.covingtontn.com/biomass-gasification.html> which is that a standard PHG 12 tpd unit was installed; obviously a mismatch. The previous permit information relating to the inputs for combined woody biomass + sewage sludge appear to be more in sync with this 12 tpd capacity at around 13 tpd.

Has this been addressed with Mr. Scott from VES and has there been any other permit application amendments or changes submitted by VES to TDEC since the one from February?

I've copied Mr. Tracy Watson (EPA Region 4) who is also looking at some of the VES information as well as the gasification issue at large in order to keep him in the loop.

Thanks and I hope everyone is doing well.

Mark Bloeth  
US EPA Region 4  
Air and Radiation Division  
Communities and Air Toxics Section  
(404) 562-9013

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**From:** Bloeth, Mark  
**Sent:** Wednesday, March 10, 2021 2:12 PM  
**To:** John Fuss <[John.Fuss@tn.gov](mailto:John.Fuss@tn.gov)>  
**Cc:** Julie Verissimo <[Julie.Verissimo@tn.gov](mailto:Julie.Verissimo@tn.gov)>; Justin Dolzen <[Justin.Dolzen@tn.gov](mailto:Justin.Dolzen@tn.gov)>; Jeryl Stewart <[Jeryl.Stewart@tn.gov](mailto:Jeryl.Stewart@tn.gov)>; Bryan Parker <[Bryan.Parker@tn.gov](mailto:Bryan.Parker@tn.gov)>  
**Subject:** RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Hi John,

Thanks for all of this comprehensive information ... just to let you know, I've queried some folks internally and also at EPA Headquarters; I hope to be able to provide you with some informal initial thoughts from R4's perspective by next week sometime. If I happen to receive any additional input from OAQPS and/or OECA I will forward that as well.

Lastly, if it is possible for EPA to be invited (as listeners only) to the first prospective call with the City of Covington / VES, it could prove beneficial in the long run; especially if I can get EPA Headquarters folks engaged ... if that is too premature at this stage, I totally understand. Thanks again for updating R4 on the ongoing status relative to this potential HMIWI issue.

Mark Bloeth  
Air Analysis and Support Branch  
Communities and Air Toxics Section  
U.S. EPA Region 4  
61 Forsyth Street, SW  
Atlanta, Georgia 30303  
(404) 562-9013

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**From:** John Fuss <[John.Fuss@tn.gov](mailto:John.Fuss@tn.gov)>  
**Sent:** Tuesday, March 9, 2021 5:02 PM  
**To:** Bloeth, Mark <[Bloeth.Mark@epa.gov](mailto:Bloeth.Mark@epa.gov)>  
**Cc:** Julie Verissimo <[Julie.Verissimo@tn.gov](mailto:Julie.Verissimo@tn.gov)>; Justin Dolzen <[Justin.Dolzen@tn.gov](mailto:Justin.Dolzen@tn.gov)>; Jeryl Stewart <[Jeryl.Stewart@tn.gov](mailto:Jeryl.Stewart@tn.gov)>; Bryan Parker <[Bryan.Parker@tn.gov](mailto:Bryan.Parker@tn.gov)>  
**Subject:** RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Good afternoon, Mark

Attached you'll find the Division's response to the City of Covington's latest operational and testing plan to perform a trial run of medical waste with their existing gasification/thermal oxidizer unit. We anticipate the City and VES will want to have a conference call regarding the remaining issues with the plan, I'd expect within the next few weeks.

We are still interested in getting your informal reaction and thoughts to the materials submitted thus far. Any insight you might have would be very helpful to us and the City on the call.

Again, we really appreciate your time and attention, Mark.

Thanks,



John Fuss | Environmental Manager 3  
Division of Air Pollution Control  
William R. Snodgrass Tennessee Tower, 15<sup>th</sup> Floor  
312 Rosa L. Parks Avenue, Nashville, TN 37243  
Office: 615-532-0535

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**From:** John Fuss

**Sent:** Thursday, March 4, 2021 9:24 AM

**To:** 'Bloeth, Mark' <[Bloeth.Mark@epa.gov](mailto:Bloeth.Mark@epa.gov)>

**Cc:** Julie Verissimo <[Julie.Verissimo@tn.gov](mailto:Julie.Verissimo@tn.gov)>; Justin Dolzen <[Justin.Dolzen@tn.gov](mailto:Justin.Dolzen@tn.gov)>; Jeryl Stewart <[Jeryl.Stewart@tn.gov](mailto:Jeryl.Stewart@tn.gov)>; Bryan Parker <[Bryan.Parker@tn.gov](mailto:Bryan.Parker@tn.gov)>

**Subject:** RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Hello and good morning, Mark.

We wanted to give you an update on the situation at Covington with their gasification/thermal oxidizer unit to contract operation to Volunteer Environmental Services (VES) to process medical wastes. As you are aware, VES asked EPA for an applicability determination to 40 CFR 60, subpart Ec for the unit, and VES received an EPA response letter that detailed applicability analysis to the HMIWI rules as inconclusive in July 2020.

In response to that letter, Covington began pursuit of obtaining permission to do a test run of processing medical waste in their unit. Discussions were held and TDEC provided instruction/guidance to Covington for what they would need to present in a test plan to obtain authority to do the test to obtain missing data (Aug 2020 TDEC letter attached).

Covington/VES's first attempt at a test plan outlining their intentions (Oct 2020 VES letter attached) was found to be insufficient. TDEC's response letter (Nov 2020 TDEC letter attached) cited various bullet point items needing to be addressed regarding EPA's July 2020 letter, as well as general test plan deficiencies.

TDEC has recently received another 'test plan' (Feb 2021 Covington letter attached), as well as subsequent email with P&IDs (email attached). Though more robust, TDEC is thinking that this still insufficient, particularly regarding amounts/ratios of medical waste and wood chips to be processed during the test, and probably most importantly, collecting the necessary data that addresses all the items identified in EPA's July 2020 letter in order to make a determination of 40 CFR 60, subpart Ec applicability for the unit.

TDEC is preparing a response to their Feb 2021 'test plan', but first wanted to offer all the information that's been made available to TDEC, to EPA.

TDEC intends to ask for clarity and more specific information in response to the Feb 2021 letter, including but not limited to the following:

- They describe oxidizer temperatures and excess oxygen, but that appears to be in reference to the syngas combustor. It does not appear they've submitted plans to address EPA's questions about temperature and oxygen content of the 'reactor'. This is the critical basis of allowing the trial run with medical waste since they have already stated they cannot answer EPA's questions without this data.
- They address composition of 'regulated medical waste' in their proximate and ultimate analyses; however, we think more detail about the specific types of plastic (specifically if chlorinated plastics are expected and in what amounts) would be good info to have.
- No mention regarding the disposition of the unit regarding the necessity for RCRA permitting.

We are interested in getting your informal reaction and thoughts to the materials submitted thus far, especially if there's any other insight you might have to assist TDEC's pending response to the Feb 2021 letter from the City of Covington.

Hope all is well on your end, Mark; we really appreciate your time and attention.

Thanks,



**John Fuss** | Environmental Manager 3  
Division of Air Pollution Control  
William R. Snodgrass Tennessee Tower, 15<sup>th</sup> Floor  
312 Rosa L. Parks Avenue, Nashville, TN 37243  
Office: 615-532-0535

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**From:** John Fuss

**Sent:** Friday, March 27, 2020 1:13 PM

**To:** Bloeth, Mark <Bloeth.Mark@epa.gov>

**Cc:** Julie Verissimo <Julie.Verissimo@tn.gov>; Justin Dolzen <Justin.Dolzen@tn.gov>

**Subject:** RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Hello Mark,

We are getting along here at TDEC pretty well, almost business as usual. Thanks for keeping us in the loop. In that regard, please find a letter we sent to VES this week regarding their pending application.

As far as the fire(s) at the facility, that was information passed on to us from personnel with our Division of Water Resources (DWR) they obtained during a site visit. According to DWR person, a treatment plant operator offered the information when asked by DWR about the unit. It was conveyed from the operator that the unit would never work unless there was someone there to monitor the feed, as the feed tended to clog. It was noted that clogging issues in the unit caused the unit to catch fire. The nature, location, and extent of the fire(s) and any damage was not mentioned or discussed.

Also, as far as we know, the unit is property of the City of Covington. Covington is currently the permit holder, though PHG (now Aries) did assume responsibility for the permit for a brief period of time. I cannot speak to any contractual obligations the City of Covington may have with Aries regarding the unit.

I hope you and yours are well, Mark. We'll continue to provide information and updates as we get them.

Thanks,



**John Fuss** | Environmental Manager 3

Division of Air Pollution Control

William R. Snodgrass Tennessee Tower, 15<sup>th</sup> Floor

312 Rosa L. Parks Avenue, Nashville, TN 37243

Office: 615-532-0535

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**From:** Bloeth, Mark [<mailto:Bloeth.Mark@epa.gov>]

**Sent:** Friday, March 27, 2020 8:41 AM

**To:** John Fuss

**Cc:** Julie Verissimo; Justin Dolzen

**Subject:** [EXTERNAL] FW: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

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Hi John (and folks),

Not sure what your situation is there, but I hope everybody at TDEC is doing alright during all of this mess.

I'm just keeping you in the loop regarding VES (see below feedback / attachments he sent yesterday).

While Mr. Scott somewhat addressed my questions, he did not seem to have any knowledge of fire incident(s) at the Covington facility and also failed to address whether there are any updated process flow schematics for the Covington gasifier.

While I the third party response information from Aries Energy (Mr. Renus Kelfkens) did help a bit regarding their position about gasification -vs- combustion, I was a little confused from his note at the end of his 12/30/19 email to Mr. Lipman (see highlight) regarding "access to the technology license for the Covington plant". In our previous conversations, I believe TDEC said the City of Covington owns the gasifier unit, so would this whole licensing issue w/ Aries Energy potentially preclude the City of Covington from using something they own? ... sounds a little weird to me, or am I out in left field on that?

If you have any clarifying answers about the above please advise and/or share any updates you may have received from VES so I can cross check what he's telling you all. Thanks much and stay safe.

Mark Bloeth

US EPA Region 4

Air and Radiation Division

Communities and Air Toxics Section

(404) 562-9013

---

**From:** stephen scott <[stephen.scott@res-ses.com](mailto:stephen.scott@res-ses.com)>

**Sent:** Thursday, March 26, 2020 12:27 PM



**To:** Bloeth, Mark <Bloeth.Mark@epa.gov>

**Cc:** Lusky, Katy <Lusky.Kathleen@epa.gov>; Davis, Amber <Davis.Amber@epa.gov>

**Subject:** RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Hello Mark,

I could use your help on getting the answers to some of these questions.

- As per the original permit applications the construction started on this unit 03/15/2013 and was completed on 01/15/2015.
- From the information I have gathered so far, the differences between the units are size and we have the largest one.
- There is no historical data showing that this system has ever even been tested with medical waste and we are therefore requesting the testing of the unit to supply exact data needed for permitting.
- I cannot find where there have ever been any fires at the gasification plant. Can you give me more information on where you have obtained your information?
- As for the temperature in the gasifier, I have been told that it is greater than 1500 degrees up to approximately 1800 degrees.
- The biochar has value for farmers for soil amendment applications, a concrete component, and to use as graphite in pencils. <https://ariescleanenergy.com/article-biochar-opportunities-knock-agricultural-research-may-open-tennessee-biochar-market/>
- The only waste stream we are applying for is medical waste.
- As for the Oxygen level in the gasifier, this could be measured if we are allowed to perform a test with medical waste as the waste stream.

Also, could you reach out to Mr. Renus Kelfkens at Aries Energy for any additional verifications you might need? (see the body of the email here and the attachments referenced in the email attached to this email)

From: Renus Kelfkens <Renus.Kelfkens@ariesenergy.com>

To: Lloyd Lipman { Ex. 6 Personal Privacy (PP) }

Sent: Mon, Dec 30, 2019 8:18 pm

Subject: RE: Covington

Dear Mr Lipman,

As you know, Aries own both the down draft (originally developed by PHG) and fluidized bed (acquired from MaxWest out of insolvency) gasification technologies. Both of these technologies were assessed and classified by EPA as non-combustion technologies and the Covington and Lebanon Plants were permitted as such. The key differentiators for a gasifier vs a combustor are that: (a) there is no open flame in a gasifier, (b) carbon conversion takes place in an oxygen deficient atmosphere through chemical reactions not excess oxygen required for combustion, and (c) the products are useable renewable reactants, i.e. syngas (CO and H2 small amount of CO2) tars and char) not CO2 and excess oxygen and ash.

Attached are two documents I could retrieve from our archives that references the EPA determinations:

- a presentation by PHG on June 10, 2014 to Memphis TDEC through the assistance of a consultant, Don Newell, Strategic Energy Analysts, LLC based in Nashville, Tennessee where the case was made and EPA Region 4 agreed with

PHG, that the Covington unit was indeed permitted based on gasification characteristics and did not pertain at all to incineration criteria.

- A letter from the EPA resolving the "Request for Determination of Applicability under 40 CFR Part 60, Subpart M - Emissions Guidelines and Compliance Timelines for Existing Sewage Sludge Incineration Units" The same function and principles apply to both gasifiers; the equipment is selected based on what best suits the particular feedstock characteristics

Your question and the only remaining issue should therefore be answered that the unit is evaluated as a gasifier not as a combustion technology similar to incineration.

So far, I have not been able to recover the actual letter or e-mail correspondence between EPA Region 4 and PHG for the Covington plant. Seeing it is a public document, the EPA correspondence should be available from EPA archives and directly off the EPA website or by request to them. I have not had time to research this route.

I hope this helps. Let me know any comments and we can explore from there.

I also wanted to let all of you know that [REDACTED] has decided to explore other opportunities and is leaving Aries effective immediately. I would like to also get a full understanding what your needs and expectations are for Aries involvement. There are specific contractual and financial related matters pertaining to the access to the technology license for the Covington plant and any required services from Aries we need to discuss. I'll schedule a call for the January 7<sup>th</sup> at 10:30am CST.

Look forward to talking to you.

Regards

Renus Kelfkens

Office (615) 471-9304

Mobile(847) 714-7124



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Thank You,

Stephen Scott

President

Volunteer Environmental Services

901-666-9330

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**From:** Bloeth, Mark <Bloeth.Mark@epa.gov>

**Sent:** Wednesday, March 4, 2020 1:26 PM

**To:** stephen scott <stephen.scott@res-ses.com>

**Cc:** Lusky, Katy <Lusky.Kathleen@epa.gov>; Davis, Amber <Davis.Amber@epa.gov>

**Subject:** FW: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

sorry, there was a typo below ... the discussion with TDEC occurred on February 27<sup>th</sup>, not in January.

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**From:** Bloeth, Mark

**Sent:** Monday, March 02, 2020 2:37 PM

**To:** 'stephen scott' <[stephen.scott@res-ses.com](mailto:stephen.scott@res-ses.com)>

**Cc:** Lusky, Katy <[Lusky.Kathleen@epa.gov](mailto:Lusky.Kathleen@epa.gov)>; Davis, Amber <[Davis.Amber@epa.gov](mailto:Davis.Amber@epa.gov)>

**Subject:** Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Hi Mr. Scott,

I received your voicemail from today and wanted to update you on my review activities and propose some additional questions to VES.

On ~~January~~ February 27, 2020 I had a discussion with the Tennessee Department of Env. and Conservation (TDEC) – Division of Air Pollution Control regarding the above subject for which VES was required to submit a new non-Title V Permit application involving the newly proposed gasification of medical waste (specific unit identified as Gasifier GS-200). There was some initial confusion on my part regarding the waste stream(s) since VES submitted a permit application (signed/dated 1/13/2020) to TDEC to include both medical waste and/or pharmaceutical wastes; this was contrary to what I understood from you last month. TDEC did forward to me a recent updated permit application (signed/dated 2/24/2020) which eliminated the pharmaceutical waste, now only indicating VES's intention to use "Regulated Medical Waste" as the only feedstock to the gasifier.

During the conversation with TDEC I posed some questions to them about the gasification process, flow schematics and other parameters for this facility; TDEC did not have detailed specifics and/or were not completely sure about some of the details to my questions.

As a start, I will need clarification from VES about the following points in order for EPA to move forward on an applicability determination specific to HMIWI:

- When was the date of initial installation of the PHG Gasifier System at the City of Covington WWTP?
- Also, the Attachment IA document in the permit application(s) mentions three PHG gasifier models (PHG-8, PHG-12 and PHG-LF), which model is "GS-200" considered being and what are the differences between them?
- Attachment IA initially describes the PHG Gasifier System Design's potential waste streams as "organic biomass ... such as urban wood waste, wood chips, and municipal solid waste" and a history of success with differing biomasses described as: "wood chips, urban wood waste, bark/hog fuel, tire derived fuel (blend), paper cubes, waste glycerol (blend) and cotton stalks." Now that VES is applying for a permit to completely change over the waste stream to regulated medical waste, is there any historical data showing that this PHG Gasifier System (or any particular PHG gasifier model) has also been proven effective or successfully demonstrated for the gasification of medical waste? Given the wide variety types and heterogenous nature of medical waste there are potential concerns for this type of waste stream being processed through a system what seems to have been primarily designed primarily for woody biomass, municipal waste, and at times sewage sludge?
- I say this because the secondary submission of the Attachment IA document has been recently modified from the original PHG Gasifier System Design document (perhaps as old as 2005) to now reference the feedstock as "medical waste" (see comparative changes at 2<sup>nd</sup> paragraph) as though PHG is promoting it as a viable / demonstrated waste stream.
- There is a process flow schematic dated 07/23/12 referencing PHG Energy LLC; has there been any currently updated process flow schematics since the City of Covington acquired ownership of the gasification plant?

- I ask this because there was mention of some apparent history of fires at the gasification plant and I would like to know when and to what extent any new installation and/or necessary repairs to damaged equipment from these fires occurred which could potentially change the process flow schematic in the current record. Do you have specifics about these fire incidents?
- What is the expected and/or observed maximum temperature (or temperature ranges) typically found in GS-200 during operation of the gasifier?
- Similarly, what are the Oxygen levels typically found in GS-200 during operation of the gasifier?
- After the gasification process, does the medical waste “biochar” have any commercial value and for what purpose? or is it the intention of VES to landfill the material?
- The previous TDEC permit application (signed 1/13/2020) contained a 2 page description relative to “Regulated Medical Waste” and a listing of “WASTE THAT WILL BE TREATED IN COVINGTON” (outlined A through D) ... this page was omitted after the secondary submission of the TDEC permit application (signed 2/24/2020); was this a deliberate omission or will there be an updated page submitted ? (obviously without the pharmaceutical waste references)
- Lastly, there appears to be some typos re the Emissions Calculations Tables (in the TDEC permit application signed 2/24/2020) where references are made to HMIWI ... Subpart “Ee” is being cited but I believe the correct citation VES is intending is Subpart “Ec”.

While I am sure to have some additional questions as the review continues; any detailed responses to the above would be most appreciated.

Thanks so much.

Mark Bloeth  
 US EPA Region 4  
 Air and Radiation Division  
 Communities and Air Toxics Section  
 (404) 562-9013